

Trend Study 17-64-02

Study site name: Water Hollow.

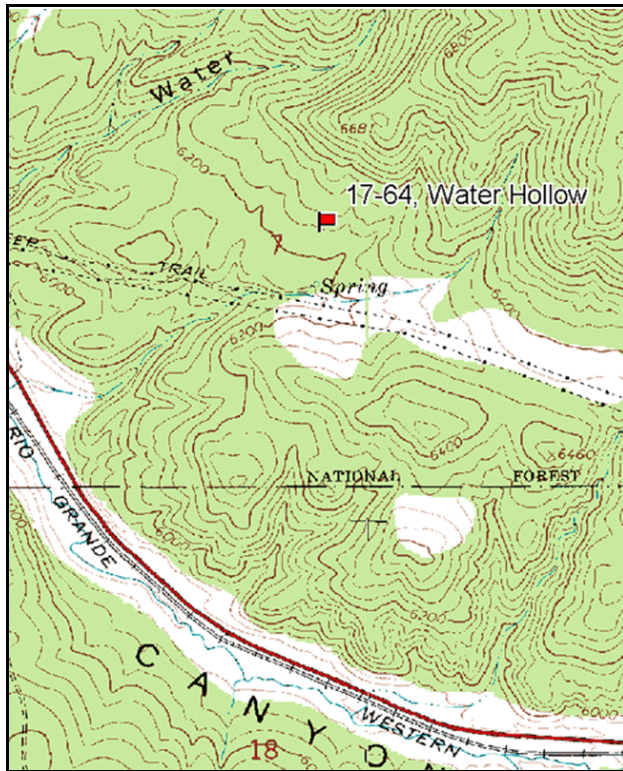
Vegetation type: Chained, Seeded P-J.

Compass bearing: frequency baseline 277 degrees magnetic.

Frequency belt placement: line 1 (11 ft), line 2 (34 ft), line 3 (59 ft), line 4 (71 ft), line 5 (95 ft).

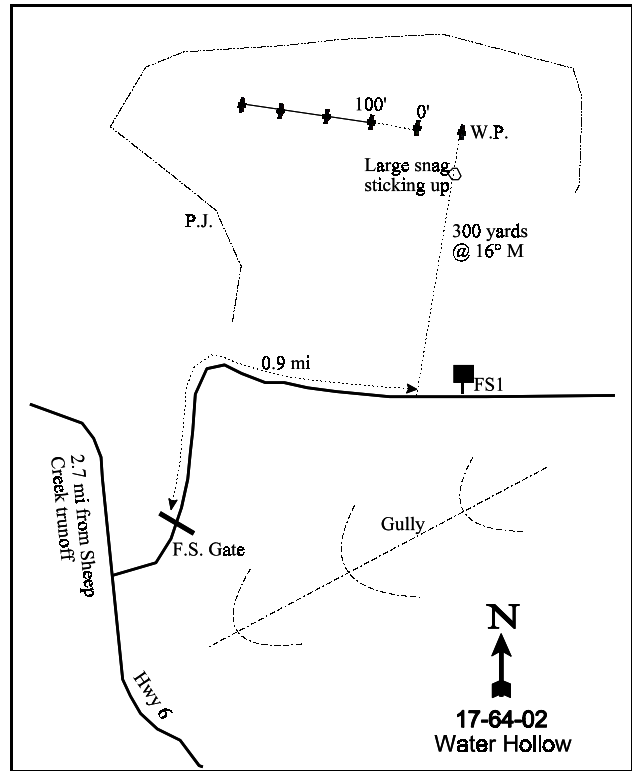
LOCATION DESCRIPTION

From Spanish Fork Canyon, take Highway 6 to the Sheep Creek turnoff. Continue on Highway 6 for 2.2 miles to a road on the north side of the road (left). Follow this road to a Forest Service gate. From the gate, go 0.9 miles to a Forest Service sign. Park here and walk 300 yards at 16 degrees magnetic to the witness post. A large clump of chained P-J is in front of the post. The 0-foot stake is just west of the witness post and is marked with browse tag # 132.



Map Name: Mill Fork

Township 10S, Range 6E, Section 7



Diagrammatic Sketch

GPS: NAD 27, UTM 12S 4423898 N 474939 E

DISCUSSION

Water Hollow - Trend Study No. 17- 64

This is a new trend study established in 2002 to monitor a pinyon-juniper chaining on big game winter range. The area is located in Spanish Fork Canyon, just north of Highway 6 on U.S. Forest Service land. Several small areas were chained and seeded in the 1990's to improve winter range and stabilize the watershed. The trend study is located within a chained area of about 60 acres. It has a slope of about 11% with a south aspect and an elevation of approximately 6,200 feet. The area receives heavy winter deer and elk use with additional use occurring in the spring and fall. Some deer use the area year round. A pellet group transect read on site in 2002 estimated 25 deer and 115 elk days use/acre (62 ddu/ha and 284 edu/ha). Rabbit pellets were also common.

Soil at the site is moderately deep with an estimated effective rooting depth estimated at over 15 inches. There is little rock on the surface or within the profile. Geologically, the area is part of the Green River Shale formation. These soils are notoriously highly erodible and severe erosion is apparent outside of the chained area. Soil texture on the site is a sandy clay loam with a slightly alkaline reaction (pH of 7.4). Soil organic matter is fairly high averaging 3.4%. Vegetation and litter cover is high but there are areas of exposed bare soil and some localized soil movement is occurring. The soil erosion condition class was determined to be slight in 2002.

Prior to the chaining, this area was totally dominated by juniper and pinyon trees with few shrubs in the understory. The chaining was done using a smooth 90 lb chain. Density of surviving juniper was estimated using point quarter data in 2002 at 30 trees/acre with an average diameter of 4.6 inches. About 75% of the juniper sampled were trees tipped over by the chaining but were still living. The other 25% were small young trees which survived the chaining. Pinyon was estimated at only 7 trees/acre with an average diameter of 2 inches.

Fourwing saltbush and antelope bitterbrush, which were seeded using a dribbler, occur in low numbers. All bitterbrush was heavily hedged but displayed good vigor. Annual leader growth was excellent, averaging 4 inches in 2002. Fourwing saltbush was moderately browsed and had good vigor. Annual leader growth averaged 3.4 inches. Small numbers of mountain big sagebrush and white rubber rabbitbrush, which were included within the aerial seed mix, were also found on the site.

The herbaceous understory is abundant and very diverse. Fifteen species of grass was encountered on the site. These combined to produce nearly 21% cover in 2002. Common species include native and exotic seeded species, crested, western, and intermediate wheatgrass, smooth brome, and Great Basin wildrye. Forbs are rare and include alfalfa and blue flax.

2002 APPARENT TREND ASSESSMENT

The soil is well protected compared to the nearby unchained pinyon-juniper woodland where erosion is severe. There is some localized soil movement on the site and the soil erosion index was determined to be slight in 2002. Shrubs occur in small numbers. Preferred species, fourwing saltbush and bitterbrush, were seeded by a dribbler. They show moderate to heavy use and have good vigor. A few sagebrush and white rubber rabbitbrush also occur on the site. It will take several more years before shrubs become very abundant on this site. The herbaceous understory is abundant, diverse, and dominated by seeded perennial grasses. Forbs are lacking.

HERBACEOUS TRENDS --
Herd unit 17 , Study no: 64

T y p e	Species	Nested Frequency '02	Quadrat Frequency '02	Average Cover % '02
G	Agropyron cristatum	156	58	6.66
G	Agropyron intermedium	128	42	3.11
G	Agropyron smithii	42	13	2.02
G	Agropyron spicatum	9	3	.41
G	Bromus carinatus	6	2	.18
G	Bromus inermis	103	38	2.67
G	Bromus japonicus (a)	3	1	.00
G	Bromus tectorum (a)	5	3	.01
G	Carex spp.	-	-	.00
G	Dactylis glomerata	19	10	.56
G	Elymus cinereus	24	12	3.69
G	Oryzopsis hymenoides	13	4	.93
G	Poa secunda	12	4	.02
G	Secale montanum	-	-	.00
G	Sitanion hystrix	7	4	.21
Total for Annual Grasses		8	4	0.01
Total for Perennial Grasses		519	190	20.52
Total for Grasses		527	194	20.54
F	Astragalus spp.	2	2	.01
F	Carduus nutans (a)	5	2	.01
F	Cirsium spp.	-	-	.00
F	Gilia spp. (a)	4	1	.03
F	Lactuca serriola	1	1	.00
F	Linum lewisii	18	7	.28
F	Lithospermum ruderales	-	-	.00
F	Medicago sativa	-	-	.00
F	Penstemon caespitosus	1	1	.03
F	Streptanthus cordatus	1	1	.00
F	Tragopogon dubius	9	5	.02
Total for Annual Forbs		9	3	0.03
Total for Perennial Forbs		32	17	0.37
Total for Forbs		41	20	0.40

BROWSE TRENDS --

Herd unit 17 , Study no: 64

T y p e	Species	Strip Frequency '02	Average Cover % '02
B	Atriplex canescens	2	.63
B	Juniperus osteosperma	1	1.86
B	Purshia tridentata	2	-
Total for Browse		5	2.49

CANOPY COVER -- LINE INTERCEPT

Herd unit 17 , Study no: 64

Species	Percent Cover '02
Atriplex canescens	.50
Juniperus osteosperma	2.50
Purshia tridentata	.33

Key Browse Annual Leader Growth

Herd unit 17 , Study no: 64

Species	Average leader growth (in) '02
Atriplex canescens	3.4
Purshia tridentata	4.0

Point-Quarter Tree Data

Herd unit 17, Study no: 64

Species	Trees per Acre '02	Average diameter (in) '02
Juniperus osteosperma	30	4.6
Pinus edulis	7	2.1

BASIC COVER --

Herd unit 17 , Study no: 64

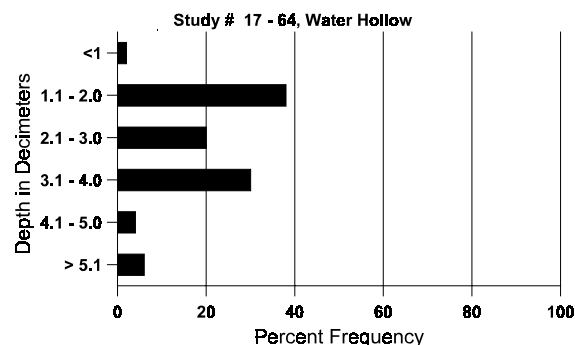
Cover Type	Nested Frequency '02	Average Cover % '02
Vegetation	324	25.31
Rock	116	1.94
Pavement	260	3.73
Litter	484	56.09
Cryptogams	17	.23
Bare Ground	312	30.10

SOIL ANALYSIS DATA --

Herd Unit 17, Study no: 64, Water Hollow

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	dS/m
15.4	60.4 (12.8)	7.4	48.7	20.0	31.3	3.4	4.5	236.8	.7

Stoniness Index



PELLET GROUP FREQUENCY --

Herd unit 17 , Study no: 64

Type	Quadrat Frequency	Pellet Transect	
		Pellet Groups per Acre	Days Use per Acre (ha)
	'02	02	02
Rabbit	27	-	-
Elk	36	1496	115 (284)
Deer	14	331	25 (63)

BROWSE CHARACTERISTICS --

Herd unit 17 , Study no: 64

A Y G R E	Form Class (No. of Plants)	Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total
	1 2 3 4 5 6 7 8 9	1	2	3	4			
Artemisia tridentata vaseyana								
M 02	- - - - - - - - -	-	-	-	-	0	19 26	0
X 02	- - - - - - - - -	-	-	-	-	20		1
% Plants Showing <u>Moderate Use</u> <u>Heavy Use</u> <u>Poor Vigor</u> <u>%Change</u> '02 00% 00% 00%								
Total Plants/Acre (excluding Dead & Seedlings)						'02 0	Dec:	-
Atriplex canescens								
M 02	1 1 - - - - - - -	2	-	-	-	40	45 51	2
% Plants Showing <u>Moderate Use</u> <u>Heavy Use</u> <u>Poor Vigor</u> <u>%Change</u> '02 50% 00% 00%								
Total Plants/Acre (excluding Dead & Seedlings)						'02 40	Dec:	-

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Chrysothamnus nauseosus albicaulis																		
M	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	29	43	0
% Plants Showing '02		<u>Moderate Use</u> 00%			<u>Heavy Use</u> 00%			<u>Poor Vigor</u> 00%			<u>%Change</u>							
Total Plants/Acre (excluding Dead & Seedlings)														'02	0	Dec:	-	
Chrysothamnus viscidiflorus viscidiflorus																		
M	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	14	24	0
% Plants Showing '02		<u>Moderate Use</u> 00%			<u>Heavy Use</u> 00%			<u>Poor Vigor</u> 00%			<u>%Change</u>							
Total Plants/Acre (excluding Dead & Seedlings)														'02	0	Dec:	-	
Gutierrezia sarothrae																		
X	02	-	-	-	-	-	-	-	-	-	-	-	-	-	500			25
% Plants Showing '02		<u>Moderate Use</u> 00%			<u>Heavy Use</u> 00%			<u>Poor Vigor</u> 00%			<u>%Change</u>							
Total Plants/Acre (excluding Dead & Seedlings)														'02	0	Dec:	-	
Juniperus osteosperma																		
Y	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
% Plants Showing '02		<u>Moderate Use</u> 00%			<u>Heavy Use</u> 00%			<u>Poor Vigor</u> 00%			<u>%Change</u>							
Total Plants/Acre (excluding Dead & Seedlings)														'02	20	Dec:	-	
Purshia tridentata																		
Y	02	-	-	-	-	-	2	-	-	-	2	-	-	-	40			2
M	02	-	-	1	-	-	-	-	-	-	1	-	-	-	20	17	28	1
% Plants Showing '02		<u>Moderate Use</u> 00%			<u>Heavy Use</u> 100%			<u>Poor Vigor</u> 00%			<u>%Change</u>							
Total Plants/Acre (excluding Dead & Seedlings)														'02	60	Dec:	-	
Symphoricarpos oreophilus																		
M	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	12	18	0
% Plants Showing '02		<u>Moderate Use</u> 00%			<u>Heavy Use</u> 00%			<u>Poor Vigor</u> 00%			<u>%Change</u>							
Total Plants/Acre (excluding Dead & Seedlings)														'02	0	Dec:	-	